

REMARKS

Claim amendments

Claim 10 has been amended to recite a radiation absorbing dye dissolved in a solvent or carrier. Support for the amendment may be found, e.g., on page 11, lines 5-6 and lines 15-16 of the present specification.

No new matter is added by this Amendment, and Applicants respectfully submit that entry of this Amendment is proper.

Status of the claims

The Amendment submitted on December 20, 2007 stands objected to for its introduction of allegedly new matter. Claim 21 stands rejected under 35 U.S.C. § 102(b)/103(a) as allegedly being anticipated by, or in the alternative as allegedly being obvious over Muellich (U.S. Patent No. 5,893,959). Claims 2-8, 10, 13-20, 26-27, 29, 62, and 68-74 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Corrsin (U.S. Patent No. 3,477,194) in view of Andrus et al. (U.S. Patent No. 5,093,147) (hereinafter "Andrus"). In addition, Claims 2-8, 10, 13-20, 27, 29, 62, and 67-74 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Muellich in view of Andrus. Further, Claims 63-67 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Corrsin and Andrus, further in view of Osborne (U.S. Patent No. 4,069,080). Finally, Claims 26, 30, and 63-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Muellich and Andrus, further in view of Osborne.

Response to new matter objection

Claim 10 is amended to recite a radiation absorbing dye dissolved in a solvent or carrier. Support for the amendment is found, e.g., on page 11, lines 5-6 and lines 15-16 of the present specification. Accordingly, withdrawal of the objection is respectfully requested.

Response to Claim Rejections

As an initial matter, Applicants note that the Examiner's response to Applicants' arguments filed August 7, 2008 did not include responses to Applicants' arguments, including, for example, the fact that Corrsin and Andrus are nonanalogous art. Applicants' arguments based on Muellich were also not addressed. Applicants respectfully request the Examiner's specific responses to all of Applicants' arguments.

Response to rejection of claims 2-8, 10, 13-20, 26-27, 29, 62 and 68-74 under 35 U.S.C. 103(a) based on Corrsin in view of Andrus

It is known in the laser welding art that a weld can be formed between plastics workpieces over a joint region by exposing the joint region to incident radiation having a wavelength outside the visible range so as to cause melting of the surface of one or both workpieces at the joint region, and allowing the melted material to cool thereby welding the workpieces together wherein a radiation absorbing additive is utilized to absorb the laser energy and generate heat for the welding process.

A problem however in conventional laser welding processes of this type is that there are constraints on the appearance of the workpieces that can be welded. In particular, when conventional laser process is applied to plastic parts that are transparent or substantially

transparent, one is faced with two poor choices in terms of the appearance of the assembled workpieces. In particular, one must either settle for a final assembly in which the weld is opaque (and thus visually unappealing when contrasted against the otherwise transparent assembly). Or, pursuant to the approach described in Muellich cited by the Examiner and discussed *infra*, one must be willing to alter the color and opaqueness of the plastic parts to match the color and opaqueness of the resulting weld. Thus, either a visually unappealing weld results, or one uses the approach described in Muellich in which the color and opaqueness of the workpieces is altered to match the color and opaqueness of the absorbing material after welding.

The present invention as defined in Independent Claim 10 is a solution to the above problem comprising the use of a radiation absorbing material having three key features, namely:

- (i) has an absorption band in the range of 780 nm – 1500 nm matched to the wavelength of the incident radiation (hereafter Feature 1);
- (ii) is visually transmissive after welding (hereafter Feature 2); and
- (iii) is provided in the form of a dissolved dye (hereafter Feature 3).

Turning now to Corrsin, Corrsin also generally relates to the laser welding process.

Furthermore, Applicant acknowledges that Corrsin's passage in lines 16-22 of column 4 teaches an absorber having an absorption band range of 1 to 3 microns (i.e. 1000 to 3000 nm) that overlaps with Feature 1.

However, Corrsin fails to teach both Features 2 and 3 of the present invention.

With respect to Feature 2, Applicant acknowledges that Corrsin teaches using a "substantially visually transparent" absorber in the context of joining "two transparent films, or substantially transparent films" (column 3, lines 65-70). However, there is no explicit teaching in Corrsin as to whether "substantially visually transparent" is referring to the condition of the

absorber prior to welding or, as specified in Feature 2 of present invention, the condition of the absorber *after* welding. And in the absence of a clear basis in Corrsin (or some other reference) that Corrsin's description of his absorber as "visually transmissive" is referring to the condition of the absorber *after* welding and not *prior* to welding, Applicant respectfully submits that an interpretation of Corrsin as teaching Figure 2 suggests the teaching of the invention is being improperly used to interpret the reference under MPEP 2142.

With respect to Feature 3, the Examiner acknowledges that Corrsin fails to teach this feature but argues that it would be obvious to arrive at the present invention by combining Corrsin with Andrus which teaches the use of a dye in a process for providing intelligible markings on an article's surface that are invisible to the unaided eye.

Applicant respectfully disagrees. In particular, there is no suggestion in either reference that they be combined in the manner suggested by the Examiner. Absent such a suggestion, one skilled in the art looking for a solution to the problem of removing constraints on the appearance of the workpieces would hardly be disposed on any objective basis to consult a reference like Andrus. In particular, not only does Andrus show absolutely no recognition of this problem, Andrus is completely unconcerned with the laser welding of plastics at all. Applicant respectfully submits this qualifies Andrus as "non-analogous art" pursuant to *In re Wood and Eversole*, 2002 USPQ 171 (CCPA 1979).

Furthermore, even if Corrsin and Andrus were combined in the manner suggested by the Examiner, and even if Corrsin could be interpreted as teaching Figure 2 without unduly relying on the invention itself to interpret the reference as prohibited under MPEP 2142, the combination of Corrsin and Andrus *still* does not meet the terms of Claim 10. In particular, whereas Claim 10 makes it clear that the functionality of the radiation absorbing dye is to "generate heat" for a

melting process in response to the incident radiation, the functionality of the dye taught in Andrus (including in Claim 1 thereof) is to fluoresce (i.e. generate light) in response to the incident radiation. Accordingly, if Corrsin and Andrus were combined in the manner suggested by the Examiner, the joint region would fluoresce in response to the radiation and there would be no *resulting weld*.

The rejection to the claims under this section other than Claim 10 is considered moot to the extent these are dependent claims that are not being relied upon to establish patentability.

Accordingly, Applicant respectfully submits that the present claims are not rendered obvious by this combination of references, and respectfully requests the reconsideration and withdrawal of this § 103 rejection.

Response to rejection of claims 2 -8, 10, 13-20, 27, 29, 62 and 67-75 under 35 U.S.C. 103(a) based on Muellich in view of Andrus

Muellich also generally relates to laser welding, but as discussed supra, Muellich actually embodies one of the two constraints in the conventional welding process that the present invention eliminates and, in any event, fails to teach either Features 2 or Feature 3 of the present invention.

With respect to Feature 2, there is no absolutely no teaching in Muellich of an absorber that is visually transmissive, much less visually transmissive after welding. Responsive to the Muellich passage cited by the Examiner which states that that “After welding, the individual work pieces are no longer substantially visible to the human eye”, this passage is clearly not teaching that, as specified in Feature 2 of the present invention, the *radiation absorbing material* is visibly transmissive after welding. To the contrary, this teaching in Muellich is referring to the

fact that the additives applied to the substrates in Muellich comprise color pigments that are intended to *alter the color and opaqueness of the plastic substrates to match the color and opaqueness of the pigments themselves*. In this fashion, the assembled plastic parts, although constrained to being opaque, leave a “substantially homogeneous visual impression” (see column 3, line 6 in Muellich) such that per the passage cited by the Examiner, “after welding, the individual work pieces are no longer substantially visible to the human eye”.

With respect to Feature 3, the Examiner acknowledges that Muellich fails to teach this feature but argues that it would obvious to arrive at the present invention by combining Muellich with Andrus which, as noted supra, teaches the use of a dye in a process for providing intelligible markings on an article’s surface that are invisible to the unaided eye.

Applicant respectfully disagrees. In particular, there is no suggestion in either reference that they be combined in the manner suggested by the Examiner. Absent such a suggestion, one skilled in the art looking for a solution to the problem of removing constraints on the appearance of the workpieces would hardly be disposed on any objective basis to consult a reference like Andrus. In particular, not only does Andrus show absolutely no recognition of this problem, Andrus is completely unconcerned with the laser welding of plastics at all. Applicant respectfully submits this qualifies Andrus as “non-analogous art” pursuant to *In re Wood and Eversole*, 2002 USPQ 171 (CCPA 1979).

Furthermore, even if Muellich and Andrus were combined in the manner suggested by the Examiner, the combination does not include Feature 2 of the present invention.

Moreover, even if Muellich and Andrus were combined in the manner suggested by the Examiner and the combination did teach Feature 2, this *still* does not meet the terms of Claim 10. In particular, whereas Claim 10 makes it clear that the functionality of the radiation absorbing

dye is to “generate heat” for a melting process in response to the incident radiation, the functionality of the dye taught in Andrus (including in claim 1 thereof) is to fluoresce (i.e. generate light) in response to the incident radiation.

The rejection to the claims under this section other than claim 10 is considered moot to the extent these are dependent claims that are not being relied upon to establish patentability.

Accordingly, Applicant respectfully submits that these references do not render obvious the presently claimed invention, and respectfully request the reconsideration and withdrawal of this § 103 rejection.

Response to rejection of claims 63-67 under 35 U.S.C. 103(a) based on Corrsin and Andrus in view of Osborne

The rejection to these claims is considered moot to the extent these are dependent claims that are not being relied upon to establish patentability.

Response to rejection of claims 26, 30, and 63-66 under 35 U.S.C. 103(a) based on Muellich and Andrus in view of Osborne

The rejection to these claims is considered moot to the extent these are dependent claims that are not being relied upon to establish patentability.

Response to rejection of product-by-process claim 21 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Muellich

Applicant submits that the presently claimed invention is novel in respect of Muellich, because Muellich does not disclose all the features of the presently claimed invention.

The present invention allows for welding to be performed without any need to alter the color of the parts, which stands in stark contrast to Muellich's use of visually opaque additives that render workpieces, and thus the welded component, visually opaque.

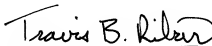
Accordingly, Applicant respectfully submits that Muellich is structurally distinct from the presently claimed invention, and Applicant therefore respectfully requests the reconsideration and withdrawal of this §§ 102/103 rejection.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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